REMARKS

Reconsideration and allowance are respectfully requested.

Drawings:

Amended Figures 3 and 4 are being submitted in the attached Replacement Sheets addressing Drawing related issues in the office action.

Entry and withdrawal of the objections are requested.

Claim Rejections under 35 USC 112, second paragraph:

Claim 1 has been amended to correctly define the flow gap arrangement. Claims 30 and 31 have been amended to change "the" to --a-- in each claim.

As to claim 22, this claim defines the sides of the groove whereas claim 15 defines the sides of the seal ring. Therefore, the two are different, because one has to do with the groove and the other with the seal ring.

Antecedence for the amendments can be found in the original specification, claims, and the original drawings.

No new matter has been added by the above amendments or by the present response.

Entry of all the amendments and withdrawal of the rejections are requested.

Claims 15 and 18-21 are patentable under 35 U.S.C. 102(b) over Voss (U.S. Patent 5,462,076).

The present invention, as defined in claim 15, is a unique pressure limiting valve device for protecting hydraulic pressure packs against an overload and hydraulic props against falling

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rocks in underground mining and tunnel construction. The valve device comprises pressure limiting valve which includes a valve housing, a consumer connection coupled to the valve housing, a pressurized fluid outlet in the consumer connection for allowing flow of pressurized fluid. A movable closure separates the pressurized fluid outlet and the consumer connection, a flow gap is between the pressurized fluid outlet and the consumer connection, and a valve spring in the valve housing exerts force such that the movable closure is movable against the force exerted. An inventive seal on the movable closure secures the flow gap with the valve housing and the consumer connection remaining connected when the overload occurs for discharging the pressurized fluid. The seal comprises a groove and a seal ring with limited flexibility disposed in the groove without pre-stressing. The seal ring has a side facing the connection, a second side opposite the first side, top side and bottom opposite sides between the first side and the second side. The groove has a unique shape for allowing partial or total flow of the pressurized fluid into the groove and around the seal ring, such that the seal ring is displaceable towards the connection due to flow of the pressurized fluid on sides of the seal ring including the second side away from the first side. Dependent claims add further patentable features to claim 15.

Applicant's own prior patent, Voss, relates to pressure limiting valves designed to neutralize back pressure by releasing pressure medium in the return line when overload occurs. Nothing in Voss describes, teaches, suggests or remotely hints at the sealing ring 30, 27 being pressurized by the highly pressurized water or water-oil mixture so that it is pressed on to the piston 29 or 24.

Contrary to the Examiner's holding, Voss expressly requires a pair of O-rings having different hardness. The O-ring forming a "soft" sealing ring passes the spring piston and the O-ring with greater hardness passes by the pressure medium. Thus, Voss expressly teaches that the

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harder O-ring is required so that it remains unaffected by the pressure medium. Given that express teaching, Voss does not even remotely hint at a seal ring which is displaceable due the flow of the pressurized medium on sides of the seal ring. Moreover, Voss relates to an O-ring and not a seal ring having the claimed sides.

As pointed out in the present specification (pages 1-2) the O-rings deform causing the hydraulic pressure occurring in the groove or acting in the groove to act in the direction of the flow gap which is exactly the problem addressed by and resolved by the present invention. The claimed device avoids the wear and tear that is a constant problem dogging existing O-rings.

Voss expressly teaches that the sealing ring 12 ensures that the valve bore 11 or exit-entrance 15 can be sealed against other bores arranged in guide 9 thereby teaching away from the claimed flow gap and pressurized fluid outlet connection. Also, Voss mandates that the pressure medium be discharged via blind bore 25 and radial bores 26 into the water chamber 18 when the main piston is slid over the O-ring 27, which again teaches away from the claimed invention.

In fact, on page 11, the Examiner admits that "Voss does not teach the claimed seal" and, yet, deems Voss to teach the claimed features. To be anticipating, a prior art reference must disclose "each and every limitation of the claimed invention[,]... must be enabling[,] and must describe...[the] claimed invention sufficiently to have placed it in possession of a person of ordinary skill in the field of the invention." *In re Paulsen*, 31 USPQ2d 1671, 1673 (Fed. Cir. 1994).

Therefore, lacking each and every claim limitation, Voss cannot anticipate or render obvious the claimed invention. Claims 15 and 18-21 are patentable over Voss under 35 U.S.C. 102(b).

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Claims 15, 18-21, 26, and 27 are patentable under 35 U.S.C. 103(a) over Voss (U.S. Patent 5,462,076).

As pointed out above Voss does not teach or suggest the claimed invention.

The present invention, as defined in claim 15, is a unique pressure limiting valve device for protecting hydraulic pressure packs against an overload and hydraulic props against falling rocks in underground mining and tunnel construction. The valve device comprises pressure limiting valve which includes a valve housing, a consumer connection coupled to the valve housing, a pressurized fluid outlet in the consumer connection for allowing flow of pressurized fluid. A movable closure separates the pressurized fluid outlet and the consumer connection, a flow gap is between the pressurized fluid outlet and the consumer connection, and a valve spring in the valve housing exerts force such that the movable closure is movable against the force exerted. An inventive seal on the movable closure secures the flow gap with the valve housing and the consumer connection remaining connected when the overload occurs for discharging the pressurized fluid. The seal comprises a groove and a seal ring with limited flexibility disposed in the groove without pre-stressing. The seal ring has a side facing the connection, a second side opposite the first side, top side and bottom opposite sides between the first side and the second side. The groove has a unique shape for allowing partial or total flow of the pressurized fluid into the groove and around the seal ring, such that the seal ring is displaceable towards the connection due to flow of the pressurized fluid on sides of the seal ring including the second side away from the first side. Dependent claims add further patentable features to claim 15.

Applicant's own prior patent, Voss, relates to pressure limiting valves designed to neutralize back pressure by releasing pressure medium in the return line when overload occurs. Nothing in Voss describes, teaches, suggests or remotely hints at the sealing ring 30, 27 being

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pressurized by the highly pressurized water or water-oil mixture so that it is pressed on to the piston 29 or 24.

Contrary to the Examiner's holding, Voss expressly requires a pair of O-rings having different hardness with the O-ring forming a "soft: sealing ring passes the sprign piston and the O-ring with greater hardness paases by the pressure medium. Thus, Voss expressly teaches that the harder O-ring is required so that it remains unaffected by the pressure medium. Given that express teaching, Voss does not even remotely hint at a seal ring which is displaceable due the flow of the pressurized medium on sides of the seal ring. Moreover, Voss relates to an O-ring and not a seal ring having the claimed sides.

As pointed out in the present specification (pages 1-2) the O-rings deform causing the hydraulic pressure occurring in the groove or acting in the groove to act in the direction of the flow gap which is exactly the problem addressed by and resolved by the present invention. The claimed device avoids the wear and tear that is a constant problem dogging existing O-rings.

Voss expressly teaches that the sealing ring 12 ensures tha the valve bore 11 or exit-entrance 15 can be sealed against other bores arranged in guide 9 thereby teaching away from the claimed flow gap and pressurized fluid outlet connection. Also, Voss mandates that the pressure medium be discharged via blind bore 25 and radial bores 26 into the water chamber 18 when the main piston is slid over the O-ring 27, which again teaches away from the claimed invention of flowing the medium into the groove and displacing the sealing ring.

Therefore, Voss cannot render obvious the claimed invention. Claims 15, 18-21, 26 and 27 are patentable over Voss under 35 U.S.C. 103(a).

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Claims 16 and 17 are patentable under 35 U.S.C. 103(a) over Voss (U.S. Patent 5,462,076) in view of Farley (U.S. Patent 5,695,197).

As pointed out above Voss does not teach or suggest the claimed invention. Therefore, any further combination with other references will also lead away from the present claims.

Farley has been relied on for a seal ring. However, the Farley sealing ring is firmly attached to the support plate 22 and positioned to move with the plate. Nothing in Farley, describes, teaches or suggests that the pressure medium moves the sealing ring as uniquely done by the present invention.

Farley seeks to form a seal ring 12 with better deformation properties by adding substances to PTFE. Farley has nothing to do with a seal ring that is movable by the pressure medium flowing into the groove holding the seal ring. Moreover, Farley cannot be combined with Voss as the latter mandates the specific O-rings for that device to work. The two references do not teach a combination as proposed by the Examiner nor can they be combined without harming the Voss teachings and device.

Claims 16 and 17 are patentable under 35 U.S.C. 103(a) over Voss and Farley.

Claims 22, 24, and 25 are patentable under 35 U.S.C. 103(a) over Voss (U.S. Patent 5,462,076) in view of Farley (U.S. Patent 5,695,197) and further in view of in view of Albertson (US Patent 6,290,235).

As pointed out above Voss and Farley do not teach or suggest the claimed invention. Therefore, any further combination with other references will also lead away from the present claims.

The Examiner relies on Albertson to fill the gap inVoss.

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Albertson relates to a sealing system with first and second seal members, with the first member having spaced apart first upper and lower end faces disposed in respective glands. The Examiner relies on element 202b as being a beveled funnel-type partition "along a first side and base to accommodate a square seal 140." However, Voss expressly mandates the pair of O-rings with specific hardness for his invention to work rather than any other shaped sealing ring. The modification proposed by the Examiner will do harm to the express teaching and the device of Voss. Thus, the two references cannot be combined in the manner proposed by the Examiner. If the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims *prima facie* obvious. *In re Ratti*, 270 F.2d 810, 123 USPQ 349 (CCPA 1959).

Claims 22, 24, and 25 are patentable under 35 U.S.C. 103(a) over Voss, Farley and Albertson.

Claims 15 and 28-33 are patentable under 35 U.S.C. 103(a) over Voss (U.S. Patent 5,462,076) in view of de Launay (U.S. Patent 4,176,680).

The present invention, as defined in claim 15, is a unique pressure limiting valve device for protecting hydraulic pressure packs against an overload and hydraulic props against falling rocks in underground mining and tunnel construction. The valve device comprises pressure limiting valve which includes a valve housing, a consumer connection coupled to the valve housing, a pressurized fluid outlet in the consumer connection for allowing flow of pressurized fluid. A movable closure separates the pressurized fluid outlet and the consumer connection, a flow gap is between the pressurized fluid outlet and the consumer connection, and a valve spring

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in the valve housing exerts force such that the movable closure is movable against the force exerted. An inventive seal on the movable closure secures the flow gap with the valve housing and the consumer connection remaining connected when the overload occurs for discharging the pressurized fluid. The seal comprises a groove and a seal ring with limited flexibility disposed in the groove without pre-stressing. The seal ring has a side facing the connection, a second side opposite the first side, top side and bottom opposite sides between the first side and the second side. The groove has a unique shape for allowing partial or total flow of the pressurized fluid into the groove and around the seal ring, such that the seal ring is displaceable towards the connection due to flow of the pressurized fluid on sides of the seal ring including the second side away from the first side. Dependent claims add further patentable features to claim 15.

Nothing in the references of record describes, teaches or suggests those claimed features.

In fact, the Examiner admits that "Voss does not teach the claimed seal" and relies on de Launay to fill that gap in Voss.

De Launay relates to a check valve in a fluid flow line in which during the opening pressure the fluid passes by the sealing ring (resulting in a leaking valve). In de Launay, the fluid cannot enter the groove and flow around the sealing ring to displace the ring against the closure. The pressure of the spring presses the sealing ring onto the sealing surface and there is no displacement of the ring by the flow. Moreover, de Launay has nothing to do with a pressure limiting valve. The so-called ring 56 does not and cannot be in a sealing position caused by the presurized medium as uniquely done by the present invention.

Thus, Voss and de Launay do not describe, teach, or suggest the claimed invention. Since claim 15 is patentable claims 28-33 dependent thereon are also patentable over the references of record.

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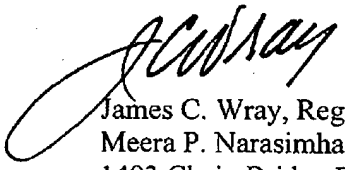
CONCLUSION

Entry of the amendment and reconsideration and allowance of all claims are respectfully requested.

Respectfully,



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